



DX1400, DX700, DX350

Class D Subwoofer Amplifiers

One of the hardest problems to overcome in a high power car stereo system is providing the tremendous amount of current necessary to feed high power amplifiers. This is especially critical in subwoofer amplification. Stillwater Designs engineers have met this challenge with the new DX-Series amplifiers. Thanks to Class D circuitry, the average current draw is much lower than with the conventional amplifier designs. Your new KICKER mono block subwoofer amplifier creates the massive power you need for optimal subwoofer performance with much less demand on your vehicle's charging system than with a conventional amplifier. It also provides a full complement of features you need for ultimate control of your subwoofer system.

FEATURES & CONTROLS

- Class D switching amplifier for maximum efficiency
- 18dB per octave low pass output filter for better noise rejection
- Maximum power at 2 Ohms on the DX700 and DX350, 1 Ohm on the DX1400
- Fully regulated power supply for rated output in real-world conditions
- Four-layer printed circuit boards for high current capabilities (DX700 and DX1400)
- Superior output circuit magnetics for better noise rejection
- 24dB per octave switchable subsonic filter @ 25Hz,
- Built-in remote gain control circuitry - under-dash remote gain controller included
- SWX two-way active electronic crossover module in Module Docking Port
- Protection circuitry - short circuit protection, reverse polarity protection, over voltage protection, thermal protection
- Silent turn on/off circuitry eliminates speaker damaging "thump"

AMERICA'S MUSIC MACHINESSM

WIRING INSTRUCTIONS

WARNING- Shock Hazard: This series of Class D amplifiers has high voltage DC present on the speaker terminals any time the amplifier is turned on. Avoid contact with the speaker connectors and wiring while the system is operational.

IMPORTANT SAFETY NOTES: Never make any wiring connections with power applied to the system. The risk of damage to components is very high. All power and speaker connectors will accept up to 8 gauge wire with these exceptions: DX700 and the DX1400 power and ground connections are designed for 4 gauge. Although the average current draw on the Class D amplifier is lower, the peak demand is about the same as for a conventional amplifier. It is very important that the screws in the amplifier's terminal strips are very tight. An allen wrench is included for this purpose. Always make the ground connection first when installing this amplifier and disconnect ground last when removing it from the system.

Connect the ground wire, which is 24 inches or less, to a structural chassis member. Be sure the connection is to bare metal and securely screwed or bolted. (It is not recommended to run the ground wire to the battery). Check the factory ground wire at the battery. Besides the large wire going to the engine block, there should be a smaller wire going from the battery negative to the body of the vehicle. If this wire is smaller than the recommended power wires shown below, then this ground wire needs to be enlarged. Run a positive wire of the size shown below directly to the positive terminal of the battery and use a fuse of appropriate size within 18 inches of the battery. This fuse protects the wire run from the battery.

Please refer to wire gauge selection chart below for minimal loss at full rated power under test conditions:

Model	Up to 10 feet	10-20 feet
DX1400	2ga.	0ga.
DX700	4ga.	2ga.
DX350	8ga.	4ga.

Inline fuse values (used at the battery):

DX1400 = 150A (supplied with amp).

DX700 = 90A

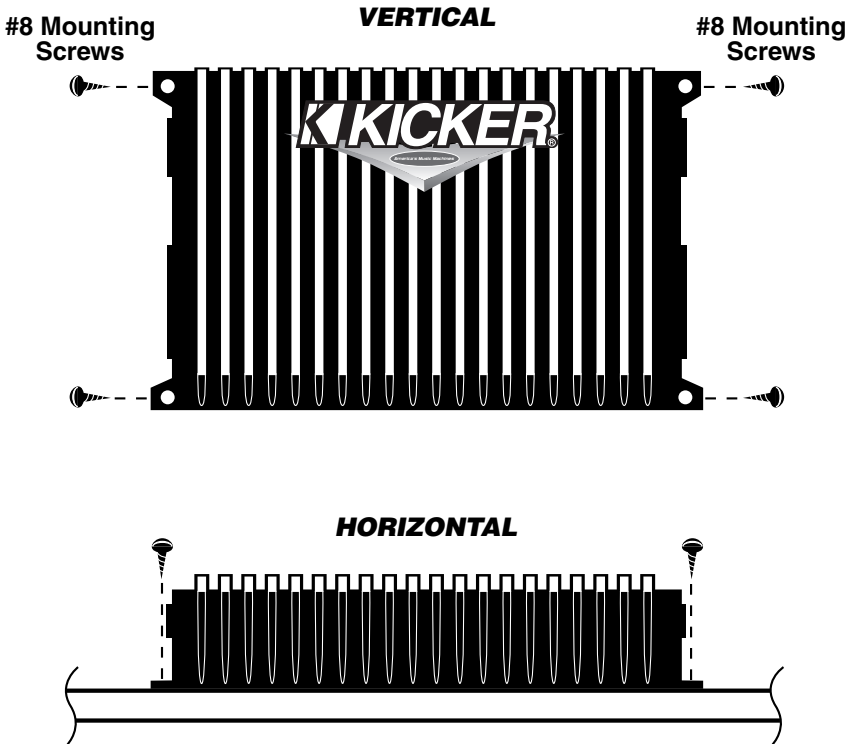
DX350 = 50A

When running the signal (RCA) cables, keep them away from all power wires in the vehicle to avoid noise. If a signal cable must cross power wires, try to make the junction at 90 degrees. This will have the least chance of picking up noise.

Note: In the case where the recommended wire size is larger than the amplifier's connector, it may be necessary to use a power distribution block or inline connector to adapt down to the size your amp will accept.

MOUNTING INSTRUCTIONS

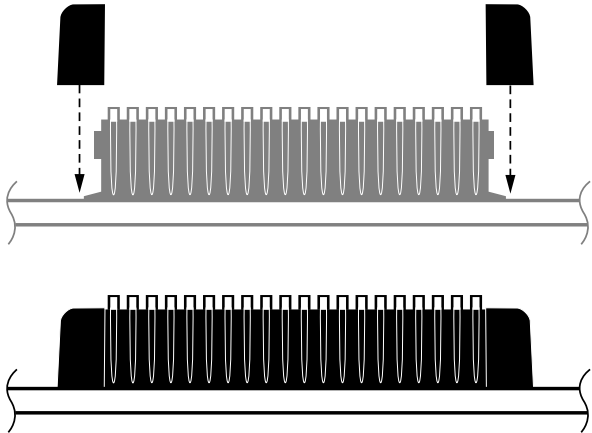
The orientation of the amplifier is critical to proper cooling. The cooling fins are designed to operate best when the amp is in a vertical position or mounted flat with the fins up. It is important to keep the chassis of the amplifier isolated from the metal of the vehicle because the heatsink is connected to signal ground for noise isolation. Grounding the heatsink will cause a ground loop. The plastic inserts in the mounting feet of the amp should remain in place as isolators. These inserts are designed to accept #8 screws for mounting.



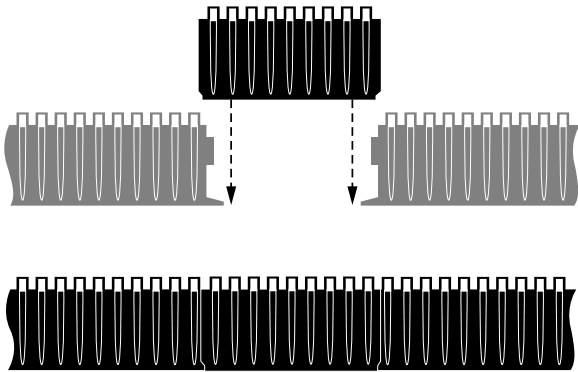
(Mounting Instructions, continued)

Use KICKER End Caps and KICKER Sink Links to cover exposed end panels and hiding wiring in multiple amplifier installations.

SUPPLIED END CAPS SNAP INTO PLACE OVER AMP END PANELS



OPTIONAL SINK LINK COVERS TWO AMPLIFIER END PANELS

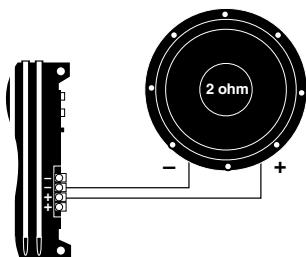


SYSTEM DIAGRAMS

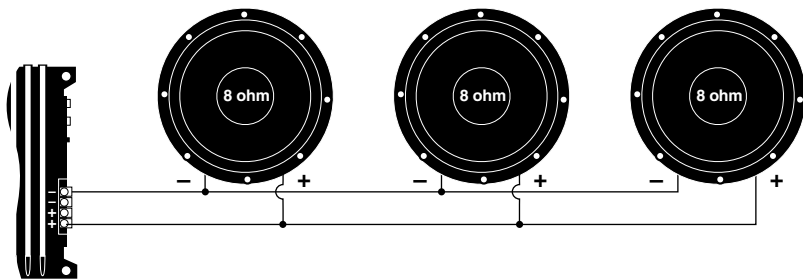
The following diagrams illustrate connections for optimum operating impedance. For maximum efficiency, the Class D amplifiers are optimized for a narrow range of impedances. The DX 350 and DX700 will make full power at a total speaker impedance of 2 Ohms; the highest recommended load impedance for these models is 4 Ohms. The DX1400 is optimized for 1 Ohm operation with a maximum load impedance of 2 Ohms. Failure to adhere to these recommendations will cause amplifier malfunction or dramatic loss of power.

You will notice that there are four screw terminals for connection to the woofer(s). This is a mono amplifier and the two positive terminals are joined together inside the amplifier, as are the negative terminals. Connection to only one of each of these terminals is needed to get full output from the amp. Two positives and two negatives are supplied to make it easier to hook up multiple woofers as shown in the diagrams.

Single 2ohm woofer for use with the DX350 orDX700



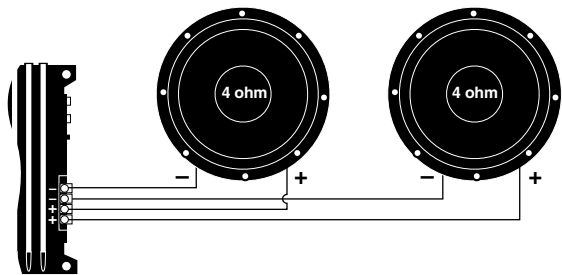
Three 8ohm woofers in parallel show a 2.66 ohm load to the amp. Suitable for the DX350 and the DX700.



Using three 4 ohm woofers in parallel shows a 1.33 ohm load to the DX1400 amp.

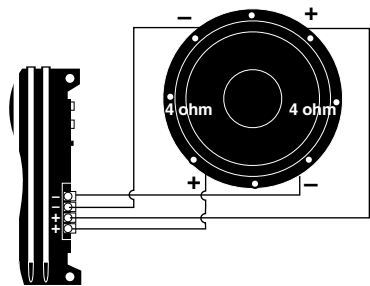
(System Diagrams, continued)

2 ohm load for the DX350 and DX700



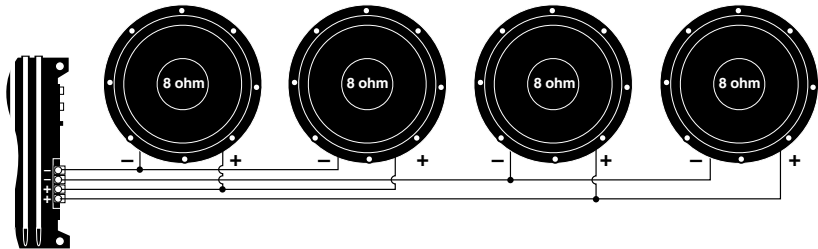
Using two 2ohm woofers will give a 1ohm load suitable for use with the DXS1400.

Dual V.C. 4ohm with both coils wired this way gives a 2ohm load to the amp for DX350 and DX700.



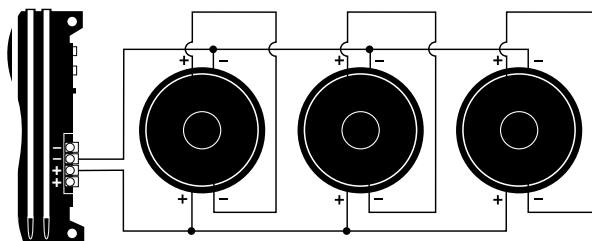
Using a dual 2ohm woofer will give a 1ohm load suitable for use with the DX1400.

Four 8ohm woofers will give a 2ohm load Suitable for use with the DX350 and DX700.



Using four 4ohm woofers will give a 1ohm load to the DX1400.

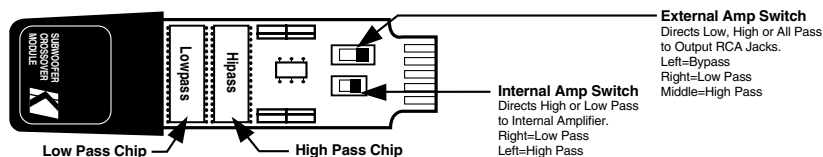
(System Diagrams, continued)



Three dual voice coil woofers
(4ohm DVC minimum for all amplifier models)

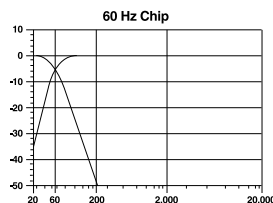
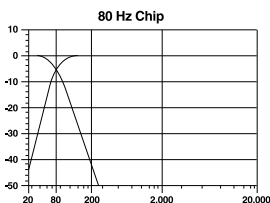
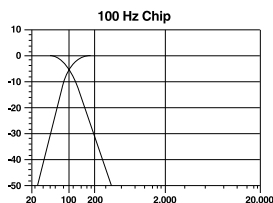
SWX MODULE AND REMOTE GAIN CONTROL

Controls for the SWX Active Electronic Subwoofer Crossover Module supplied with your DX-Series amplifier are illustrated below. These controls allow you to set which signals are presented to the amplifier and to the amplifier's RCA outputs.



The module also allows you to set a crossover point between the subwoofer and mid-bass frequencies. Crossover frequencies are set with supplied chips. Three pairs of chips are provided to set the crossover point at 60, 80, or 100Hz. To change a chip, carefully insert a small flat-blade screwdriver between socket and chip, then gently pry upward. Carefully insert the replacement chip, making certain the pins are aligned with the holes in the socket.

The graphs show the effect of the SWX module. Note the steep 24dB/octave slopes. Also note that the response of each section is -6dB at the crossover frequency. This response is correct for a 24dB/octave crossover, and the responses sum to 0dB at the crossover point.



Your DX amplifier has built-in control circuitry similar to the KICKER RGM Remote Gain Module. If you wish to use this feature to control the level of your amplifier, simply plug in the 20 foot phone cord to the jack on the chassis and run it up to the dashboard or wherever you want to mount the control panel. First find a suitable location under the dash or wherever is convenient. Be certain to check behind the desired location for wiring or other obstructions before drilling 7/64" pilot holes for the supplied #8 screws.

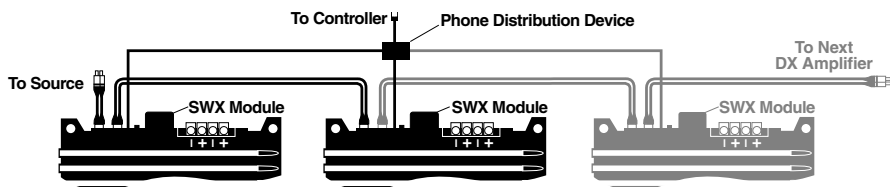
USING MULTIPLE DX-SERIES AMPLIFIERS

Like all KICKER power amplifiers, your DX-series amp may be easily linked (or "daisy-chained") with up to ten other amplifiers by simply running cables from one amp's RCA outputs to the next amp's inputs. This feature eliminates the need for noise-inducing signal splitters. As shown on previous page, module settings determine which frequencies are sent to the next amp.

Below are two methods of daisy-chaining multiple DX-series amps and controlling all amps' gains with a single remote controller. In both cases, the signal path is the same, but the method of controlling the subwoofer amps' gains differs.

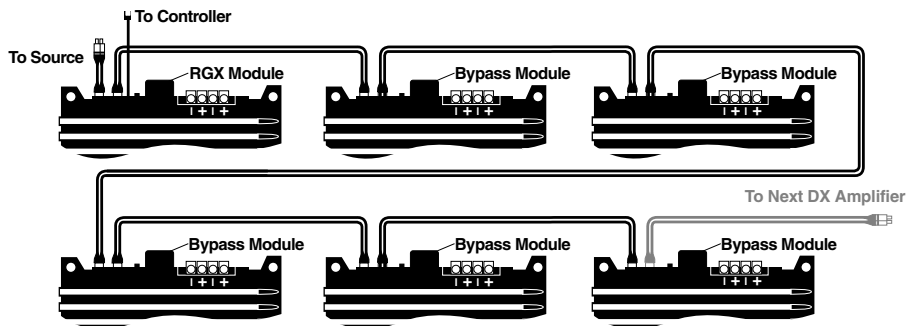
Up to Five DX Amps Using Internal Remote Gain Feature

The system diagram below shows the best way to link five or fewer DX amps. By running phone cords from each unit's Remote Gain jack to a modular phone distribution device (like Radio Shack's part #279-433) and then running another cord from the distribution device to the controller. You can then operate all the amps' built-in gain circuitry with the single controller. The supplied SWX module should be used in all amps. On all modules, the Internal Amp switch should be set to "Low Pass" and the External Amp switch set to "Bypass."



More than Five DX Amps Using Optional Remote Gain Crossover Module

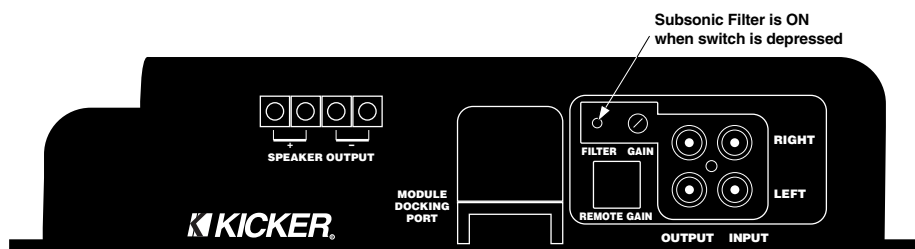
If you plan to use more than five DX amps for your subwoofer section, we recommend a different method, using a KICKER RGX Remote Gain Crossover module in the first amp and optional KICKER Bypass modules in the following amps. The Internal Amp and External Amp switches on the RGX should both be set to "Low Pass." Remote gain control for all amps is achieved by running the phone cord from the Remote Gain jack on the first DX amp to the controller.



SETTING GAIN CONTROLS AND SUBSONIC FILTER

If you are using the Remote Gain Controller, make sure the remote gain control is turned fully clockwise before starting the amplifier gain control setting. The gain control on the amplifier chassis is provided for level matching purposes; it does not give the amplifier any more power by turning it up - its purpose is to adjust the sensitivity of the amplifier in relation to the output level provided by the source.

Start with the amp gain set to minimum by turning the control on the amp counter-clockwise. Turn the source level up until distortion is barely audible - this will be at about 90-95% of full volume. Raise the amplifier gain until distortion is just audible. The gain is now set correctly. Check the level with CD/tape and tuner to make sure the adjustment is correct for all sources.



Your DX-series amplifier has a built-in subsonic filter which cuts all the ultra-low frequency information and allows the amplifier to concentrate energy where it does the most good- above 25Hz. The switch, accessible from the end panel, gives you the option of having this filter engaged or disengaged. For best sound quality and extended frequency response leave the filter off (switch in the OUT position). If you are using this amplifier with ported boxes, bandpass enclosures, or in a maximum SPL vehicle you will want to turn the subsonic filter on (switch in the IN position).

TROUBLE SHOOTING

Note: It is normal for the yellow trouble LED to blink when the amplifier is turned on or off. This is a function of the protection circuit looking for trouble.

- ❑ Red LED power indicator off, yellow trouble indicator off.

With a Volt Ohm Meter (VOM):

- Check +12 Volt terminal
- Check Ground terminal
- Check for +12 Volts at remote turn-on terminal

- ❑ Red LED power indicator on, yellow trouble indicator off:

- Check RCA and speaker connections
- Test speaker outputs with a known good speaker
- Substitute a known good signal source

- ❑ Yellow trouble LED on, red power indicator off:

1. Amp is very hot - Thermal protection is engaged. Verify that speaker load impedance is not below specified minimums. Check area around amplifier for objects which may restrict air flow and proper cooling. If this continues to be a problem, take vehicle to an authorized Kicker dealer for evaluation.
2. Amp is not too hot - Overcurrent protection is engaged, red power LED blinks every two seconds. This indicates that there is a short in the speaker wiring. Locate short using a VOM by checking between speaker positive and negative. If the amplifier is used in stereo, try disconnecting one channel at a time to help isolate which channel is shorted.
3. Amp is not too hot - Voltage to amp is not within the 9-16 volt operating range. If the vehicle's charging system goes over 16 volts, the amp will shut off. If the voltage gets too low, the amp will not operate. Using a VOM identify the voltage problem and rectify.

- ❑ Alternator noise (whistling sound that follows the engine RPM).

- Make sure that the amp case is not grounded.
- Make sure that the source has a good ground.
- Check routing of the RCA cable. Try substituting another RCA cable routed in a different location in the vehicle.
- Check gain setting to make sure that it is not too high.

- ❑ Bass output reduced.

Check system phasing by turning the balance control from the left to the right. If the bass is more prominent when turned to either side, check speaker wiring for proper positive and negative connections. Reverse connections on one channel if necessary.

CAUTION: When jump starting the vehicle, be sure that connections made with jumper cables are correct. If improper connections are made, it can result in blown amplifier fuses as well as failure in other systems in the vehicle.

If you have more questions about the installation of your new KICKER component, see the Authorized KICKER Dealer where you purchased your component. You may also call our Technical Services Line at (405)624-8583 for technical assistance or send an e-mail via the support page on www.kicker.com.

SPECIFICATIONS

	DX1400	DX700	DX350
Power			
Rated Power (watts), 4 Ω Mono	–	350*	175*
Rated Power (watts), 2 Ω Mono	700†	700**	350**
Rated Power (watts), 1 Ω Mono	1400††	–	–
* THD+N < 0.3%			
** THD+N < 0.6%			
† THD+N < 0.75%			
†† THD+N < 1.5%			
Dimensions (In.,mm)			
2.75"H x 10"W X... "L	171	14.4	11.1
2.75"H x 10"W X...mm L	435	366	282
Common to all models			
Frequency response:	10-200Hz +/- 2dB		
Signal-to-noise ratio:	-100dB, re: rated power, 10-200Hz		
Input impedance:	22kOhms		
Input sensitivity:	150mV - 3.0V		

ELECTRONICS LIMITED WARRANTY

Stillwater Designs warrants this product to be free from defects in material and workmanship under normal use for a period of **three (3) years from date of original purchase when installed by an Authorized KICKER Dealer or one (1) year from date of original purchase if not installed by an Authorized KICKER Dealer.** If this product is labeled "B Stock", it is warranted for one (1) year from date of purchase, regardless of place of installation. Should service be necessary under this warranty for any reason due to manufacturing defect or malfunction during the warranty period, Stillwater Designs will replace or repair (at its discretion) the defective merchandise with equivalent merchandise at no charge. Warranty replacements on "B-Stock" merchandise may have cosmetic scratches and blemishes. Discontinued products may be replaced with equivalent products.

This warranty is valid only for the **original purchaser** and is not extended to owners of the product subsequent to the original purchaser. Any applicable implied warranties are limited in duration to a period of the express warranty as provided herein beginning with the date of the original purchase at retail, and no warranties, whether express or implied, shall apply to this product thereafter. Some states do not allow limitations on implied warranties, therefore these exclusions may not apply to you.

This warranty gives you specific legal rights; however you may have other rights that vary from state to state.

WHAT TO DO IF YOU NEED WARRANTY OR SERVICE

Defective merchandise must be returned to your local Authorized Stillwater Designs (Kicker/Impulse) Dealer for warranty. Assistance in locating an Authorized Dealer can be obtained by writing or calling Stillwater Designs direct. You can confirm that a dealer is authorized by asking to see a current authorized dealer window decal.

If it becomes necessary for you to return defective merchandise, call the Kicker Customer Service Department at (405)624-8510 for a Return Authorization (RA) number. Package all defective items in the original container or in a package that will prevent shipping damage, and return to

Stillwater Designs, 5021 North Perkins Road, Stillwater, OK 74075

The RA number must be clearly marked on the outside of the package. Return only defective components. Non-defective items received will be returned freight collect.

Include a **dated proof-of-purchase** from an Authorized Dealer. Warranty expiration on items returned without proof-of-purchase will be determined from the manufacturing date code. Coverage may be invalidated if this date is greater than one (1) year previous to the date item is sent in. Freight must be prepaid; items received freight collect will be refused.

Failure to follow these steps may void your warranty. Any questions can be directed to the Kicker Customer Service Department at (405)624-8510.

WHAT IS NOT COVERED?

This warranty is valid only if the product is used for the purpose for which it was designed. It does not cover:

- Products purchased from an unauthorized dealer.
- Damage due to improper installation
- Damage caused by exposure to water, excessive heat, chemical cleaners, and/or UV radiation.
- Damage through negligence, misuse, accident or abuse. Repeated returns for the same damage may be considered abuse.
- Freight damage.
- The cost of shipping product to Stillwater Designs.
- Items previously repaired or modified by any unauthorized repair facility.
- Items returned from unauthorized individuals or dealers.
- Return shipping on non-defective items.
- Products with tampered or missing barcode labels.
- Products returned without a Return Authorization (RA) number.

HOW LONG WILL IT TAKE?

Stillwater Designs maintains a goal of 24-hour service for all returns. Delays may be incurred if lack of replacement inventory or parts is encountered.

INTERNATIONAL WARRANTY

Contact your International Stillwater Designs dealer or distributor concerning specific procedures for your country's warranty policies



P.O. BOX 459 • STILLWATER, OKLAHOMA 74076 • 405 624-8510

STILLWATER
Designs®

WARNING:

KICKER components are capable of producing sound levels that can permanently damage your hearing! Turning up a system to a level that has audible distortion is more damaging to your ears than listening to an undistorted system at the same volume level. The threshold of pain is always an indicator that the sound level is too loud and may permanently damage your hearing. **Please use common sense when controlling volume!**

FEBRUARY 2000